

PSC-A10M Series

1-Color Pyrometers for manufacturing, R&D, and medical applications

Overview

Digital Single Wavelength pyrometers with 4-20 mA and RS-485 modbus RTU interface



Features

- Temperature ranges from **30°C** to 1400°C
- Push buttons for sensor parameter adjustments
- On-board temperature display
- Choice of rugged protective hardware
- Aiming: Laser, through-lens, or video camera sighting
- Fast response time: 1 millisecond
- Outputs 0/4 to 20 mA and RS485 modbus RTU
- Choice of 4 variable focus optics

Description and applications

The digital pyrometers PSC-A10M series are designed for manufacturing, R&D, and medical industries.

With a short response time of only 1ms, these pyrometers are suitable for fast measuring processes. Focusable optics enable measuring spot sizes of 1 mm / 0.040". The integrated laser, aiming light, thru-lens or video sighting provides pinpoint alignment on the measurement object.

The self-contained 1-color IR sensor includes a protection quartz window for its' optical lens. Along with a rugged protective cooling jacket, the pyrometer can withstand incredibly harsh and dirty environmental conditions.

The PSC-A10MV with RS170 NTSC/ PAL color video output allows the user to view and record real-time images on a video monitor or PC with third party software.

The linear 0/4 to 20 mA output signal offers easy implementation in pre-existing measurement and control systems. The device is equipped with a RS-485 Modbus RTU interface which allows sensor parameter adjustments remotely via a PLC or HMI.

All parameters are also adjustable via IR temperature sensor push-buttons or a PC with PSC Spot software.

Typical pyrometer application areas:

- Induction heating
- Steel and Metals
- Reactors
- Welding
- Ceramics
- Semiconductor processes
- Wire processing
- Composites
- Vacuum furnace
- Research and Development



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Technical data		
Model	PSC-A10M Series	
Measuring temperature ranges	30 °C to 850 °C	75 °C to 1400 °C
Sub temperature range	adjustable within measuring temperature range, minimum span 50 °C	
Spectral range	3 µm to 5 µm	
Optics	Focusable optics, measuring a spot size of 1.0 mm, 130 : 1 FOV	
Accuracy ¹	0.6 % of measured value in °C or 1 K ^{3,4}	
Reproducibility ¹	0.3 % of measured value in °C or 0.5 K ^{3,4}	
NETD ²	0.1 K ⁵	
Response time (t ₉₅)	1 ms, adjustable up to 100 seconds set via RS-485 interface or directly at the device	
Emissivity ε	0.010 to 1.000, adjustable set via RS-485 interface or directly at the device	
Data Storage	minimum/maximum value storage, adjustable via RS-485 interface or directly at the device	
Outputs	0/4 to 20 mA, linear (switchable) via RS-485 interface or directly at the device, max. load 700 Ω	
Interface	RS-485 (galvanically isolated), half duplex, baudrate up to 115 kBd, data protocol Modbus RTU	
Switching output/Switching threshold	1 opto relay, R _{Burden} min. 48 Ω (galvanically isolated)/adjustable within temperature range	
Aiming	Laser aiming light, through-lens sighting, or color video (PSC-A10M/L/T/V)	
Software	PSCSpot for Windows®, optional: PSC Spot Pro	
Parameters	emissivity, response time, temperature unit °C or °F, storage, sub temperature range, transmittance, ambience compensation, video parameter, adjustable via RS-485 interface or directly at the device	
User controls	Laser aiming light push-button, four push buttons, display	
Power supply	24 V DC ± 25 %, residual ripple 500 mV	
Power consumption	max. 2 W	
Operating temperature	0 °C to 70 °C // 32°F to 158°F	
Storage temperature	-20 °C to 70 °C	
Weight	appr. 500 g // 1.1 lbs	
Dimensions	54 mm × 54 mm × 170 mm // 2.1" × 2.1" × 6.7" (H x W x L)	
Housing	compact housing with male connector, display and push-buttons	
Protection class	IP65 (DIN 40 050, DIN EN 60529)	
CE symbol	according to EU regulations (EN 50 011)	
Scope of delivery	PSC-A10ML/T/V, mounting screw nut, inspection sheet, manual, PSC Spot for Windows® (without connection cable, please order separately)	

¹ Specifications for black body radiator, T_{ambient} = 23 °C, ε = 1, t₉₅ = 1 s. ² Noise equivalent temperature difference. ³ Whichever is higher value. ⁴ From T_{Object} = 50 °C. ⁵ At T_{ambient} = 23 °C, t₉₅ = 100 ms, ε = 1, T_{Object} (30 °C to 850 °C) = 150 °C, T_{Object} (75 °C to 1400 °C) = 250 °C.

Dimensional drawing pyrometer-Laser (in mm)

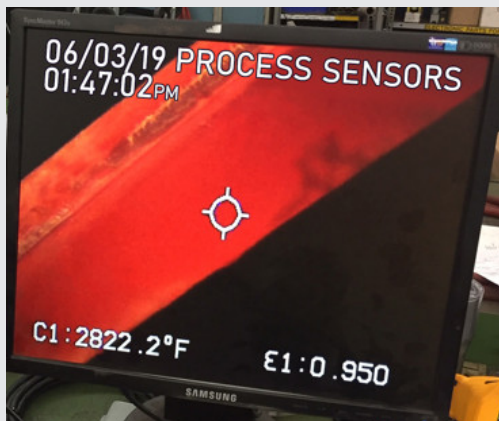


PSC-A10M Series

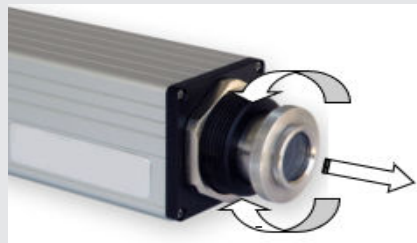
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Vario optics					Part number			
Optics	Temperature measurement range	Target size M [mm]	Measurement distance a [mm]	Aperture D [mm]		Laser aiming light	Through-lens sighting	Color video module
I	30 °C to 850 °C	1.0 to 1.3	130 to 140	11.6		PSC-5109111201	PSC-5109121201	PSC-5109131201
	75 °C to 1400°C					PSC-5109111202	PSC-5109121202	PSC-5109131202
II	30 °C to 850 °C	1.3 to 1.9	170 to 190	11.6		PSC-5109112201	PSC-5109122201	PSC-5109132201
	75 °C to 1400°C					PSC-5109112202	PSC-5109122202	PSC-5109132202
III	30 °C to 850 °C	1.8 to 2.9	230 to 290	11.6		PSC-5109113201	PSC-5109123201	PSC-5109133201
	75 °C to 1400°C					PSC-5109113202	PSC-5109123202	PSC-5109133202
IV	30 °C to 850 °C	3.2 to 7.1	360 to 710	11.6		PSC-5109114201	PSC-5109124201	PSC-5109134201
	75 °C to 1400°C					PSC-5109114202	PSC-5109124202	PSC-5109134202

Focusing adjustment of optics and Color video output



- NTSC (60 Hz), optional PAL (50 Hz)
- 510 × 496 pixels (NTSC) or 628 x 586 pixels (PAL)
- Composite video signal approx. 1 V_{SS} at 75 Ω (galvanically isolated)
- Reticule shows in size of measurement field, temperature, emissivity
- Automatic or manual exposure contrast control



Focusable optics

Temperature Menu Display

The digital display shows the current measurement value and the emissivity

Current measurement temperature



Status switching output

Set emissivity value

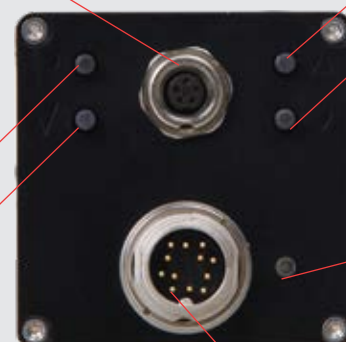
Rear Sensor Panel

The parameters can be set by using the control keys at the rear side of the device. The value set is transferred directly.

Through-lens sighting, laser, or video connector

Push buttons for "Up" and "Down"

Push buttons for "Parameter Menu" and "Enter"



Status LED

Cable connection and interface

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Electrical, mechanical and optical accessories (more accessories on request)			Part number	
Sensor cable, 12-pin, right angle connector	Sensor cable, 12-pin, straight connector	Length 2 m Length 5 m Length 10 m Length 15 m Length 20 m Length 30 m	PSC-3310A11131 PSC-3310A11132 PSC-3310A11133 PSC-3310A11134 PSC-3310A11135 PSC-3310A11137	PSC-3310A11111 PSC-3310A11112 PSC-3310A11113 PSC-3310A11114 PSC-3310A11115 PSC-3310A11117
Video connection cable		Length 2 m Length 5 m Length 10 m Length 15 m Length 20 m Length 25 m Length 30 m	PSC-3310A16521 PSC-3310A16522 PSC-3310A16523 PSC-3310A16524 PSC-3310A16525 PSC-3310A16526 PSC-3310A16527	
Interface adapter		RS-485 to USB converter	PSC-3310A14020	
Power supply		24 V DC, 1.5 A	PSC-950-004	
Mounting bracket		Adjustable	PSC-3310A21020	
Air Purge		Stainless steel, purge air 0.1 to 0.5 bar, oil-free	PSC-3310A22020	
Window slide		without window	PSC-3310A21210	
Vacuum flange		KF 16 with quartz glass with sapphire glass (scratch-proof)	PSC-3310A24015 PSC-3310A34021 PSC-3310A34051	
Cooling jacket		including air purge unit	PSC-3310A23031	
Mounting brackets		for cooling jacket	PSC-3310A23036	
PSC-DHP1040-Handheld programming device			mobile device for pyrometer parameterization	
TFT display			TFT display industrial	
Converter adapter			Video/USB	
			PSC-3310A17010	
			PSC-3310A16110	
			PSC-3310A16120	
			PSC-3310A14030	

Selected accessories – images

Mounting bracket, adjustable	Ball and socket mount	Cooling jacket with Air Purge
Part number: PSC-3310A21020 	Part number: PSC-3310A21025 	Part number: PSC-3310A23031 
Protective Jacket with Air Purge	Air purge unit	RS485 to USB Converter with cable
Part number: PSC-3310A23040 	Part number: PSC-3310A22020 	Part number: PSC-3310A14020 

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